

NIST 130 Gasoline Concerns

NCWM Petroleum Subcommittee
Meeting

January 24, 2007

History of NIST 130 Uniform Inspection Law and Regulation

- NCWM Petroleum Subcommittee formed January 1992 to Update and Expand Uniform Motor Fuels Inspection Law and Regulation.
- The Draft Documents were Essentially Developed by the end of 1993
- The Uniform Inspection Law and Regulation were Adopted by NCWM in 1995

History of NIST 130 Uniform Inspection Law and Regulation

- Changes to Law and Regulation
 - 1996 – Amended Dispenser Labeling Requirements
 - 1997 – Amended Antiknock Table (Added 86 Economy)
 - 1997 – Added E85 and M85 Specifications
 - 1998 – Added Requirements for Premium Diesel Fuel
 - 2003 – Amended Requirements for Premium D/F
 - 2004 – Added Motor Oil, ATF Lubricants Requirements
 - 2005 – Added Biodiesel Labeling Requirements

Changes in Rules and Specifications Since 1992 When the Petroleum Subcommittee was Formed

- 1992—Federal Phase II Vapor Pressure Maximum Limits
- 1992—Wintertime Oxygenate Program
- 1995—Federal Reformulated Gasoline
- 1995—D 4814 T50 150°F Minimum Classes D and E
- 1996—SIP Vapor Pressure Maximum Limits
- 1996—California Reformulated Gasoline
- 2004—Tier 2 Sulfur Maximum Limits
- 2006—Renewable Fuels Standard

Uniform Engine Fuels, etc. Inspection Law

- Reference to American Society for Testing and Materials (ASTM) *is Out of Date. Change to:*
 - ASTM International or
 - ASTM International (formerly American Society for Testing and Materials)

Uniform Engine Fuels, etc. Regulation

- Reference to American Society for Testing and Materials (ASTM) *is Out of Date. Change to:*
 - ASTM International or
 - ASTM International (formerly American Society for Testing and Materials)

Section 1. Definitions Problems

- 1.1 ASTM. – American Society for Testing and Materials (ASTM) International
 - 1.1 ASTM. – ASTM International
- 1.9 Biodiesel. – means a fuel comprised...
 - 1.9 Biodiesel. – means a blend stock comprised... *See 2.16 for consistency*
- 1.14 Denatured Fuel Ethanol. – means...§1.19
 - means... §1.21
- 1.21 Ethanol. – also...Bureau of Alcohol, Tobacco, and Firearms (BATF)
 - 1.21 Ethanol. – also...Alcohol and Tobacco Tax and Trade Bureau (TTB)

Section 1. Definitions Cont'd.

- 1.35 Low Sulfur. – *What about ultra low sulfur?*
- 1.47 SAE. – means the Society of Automotive Engineers
 - 1.47 SAE. – means SAE International
- Add new definitions for:
 - Conventional Gasoline
 - SIP Gasoline
- Review definition of:
 - Reformulated Gasoline (see ASTM RR)

2.1 Gasoline and Gasoline-Oxygenate Blends

- 2.1.1. The most recent version of ASTM D 4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” except that volatility standards for unleaded gasoline blended with ethanol shall not be more restrictive than those adopted under the rules, regulations, and Clean Air Act waivers of the U.S. Environmental Protection Agency (which includes rules promulgated by the State). Gasoline blended with ethanol shall be blended under any of the following three options:
 - 2.1.1.1. The base gasoline used in such blends shall meet the requirements of ASTM D 4814, or
 - 2.1.1.2. The blend shall meet the requirements of ASTM D 4814, or
 - 2.1.1.3. The base gasoline used in such blends shall meet all the requirements of ASTM D 4814 except distillation, and the blend shall meet the distillation requirements of the ASTM specification.
- 2.1.2. Blends of gasoline and ethanol shall not exceed the ASTM D 4814 vapor pressure standard by more than 1.0 psi.

2.1.1 Interpretation

- 2.1.1.1. means Splash Blend
- 2.1.1.2. means Refinery Blend
- 2.1.1.3. means BOB Blend
- “volatility standards for unleaded gasoline blended with ethanol shall not be more restrictive than those adopted under the rules, regulations, and Clean Air Act waivers of the U.S. Environmental Protection Agency (which includes rules promulgated by the State).”
 - Does not address being as restrictive

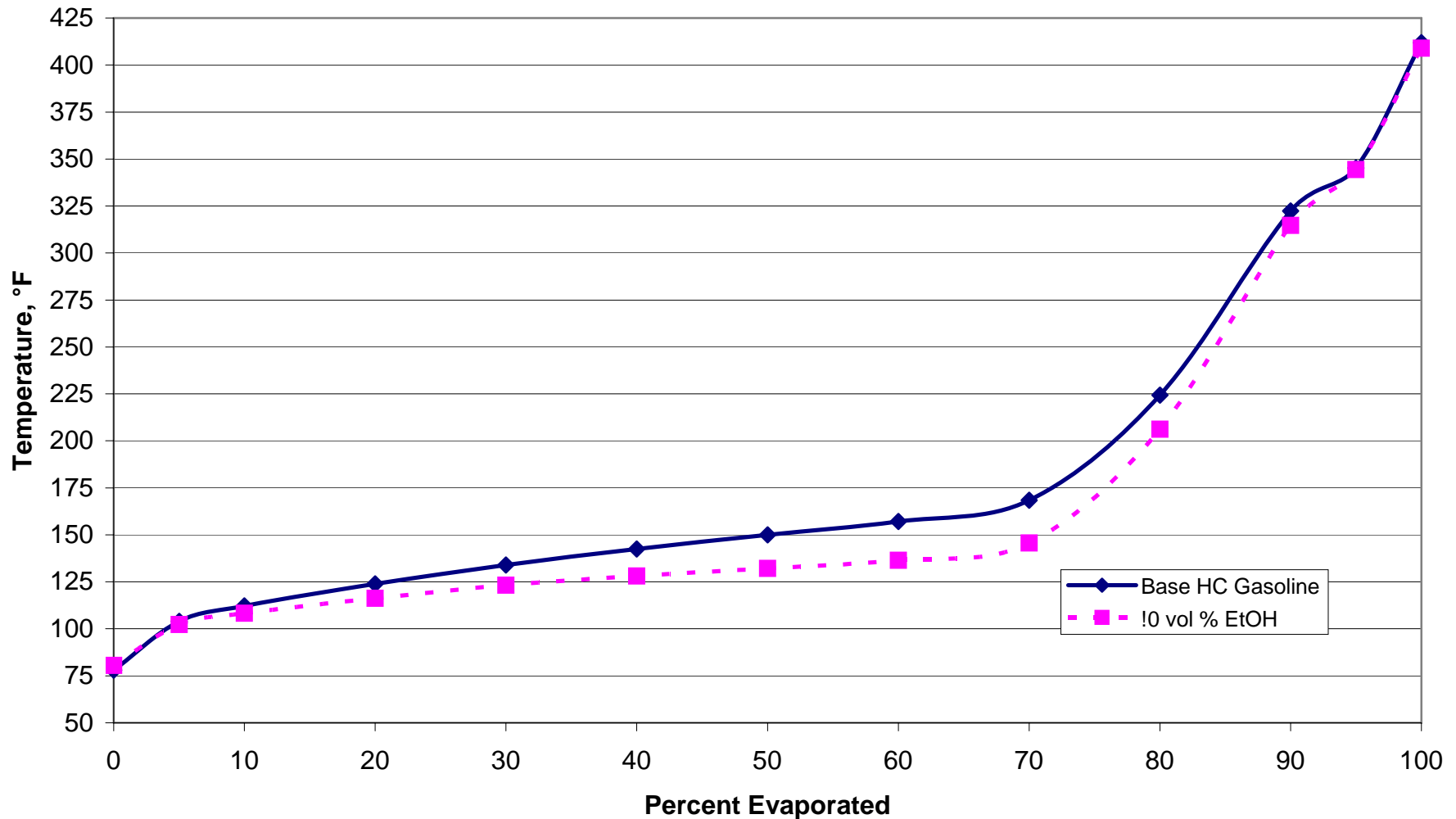
2.1.1 Inconsistency of Application

- 2.1.1. The **most recent version** of ASTM D 4814
 - What Does it Mean and How is it Applied?
 - Most Recent Version on ASTM Web Site
 - Most Recent Version in Latest Publication of Annual Book of ASTM Standards
 - Should “Most Recent Version” be Defined for Uniformity of Application?

Issues for NIST 130

- Update Names of Organizations
- Federal Phase II Vapor Pressure Maximum Limits
 - 1 psi Waiver Only Applies to Blends Containing 9-10 vol % Ethanol
- Wintertime Oxygenate Program
- Federal Reformulated Gasoline
 - No Vapor Pressure Waiver Allowed
- D 4814 T50 150°F Minimum Classes D and E
 - Splash Blending into 150°F T50 Gasoline Questionable Product

Effect of Ethanol Addition on the Distillation Curve of a Gasoline with T50=150°F



Issues for NIST 130 Cont'd

- SIP Vapor Pressure Maximum Limits
 - No Vapor Pressure Waiver Allowed for Some SIP Gasolines (Allowed for GA, IN, IL, KS, MI, & MO)
- California Reformulated Gasoline
 - No Vapor Pressure Waiver Allowed
- Tier 2 Sulfur Maximum Limits
 - Blend Can't Exceed Sulfur Maximum Limit
- Renewable Fuels Standard
 - Increased Ethanol Use Increases Exposure to Potential Problems

Possible Future Issues for NIST 130

- T V/L=20 Limits Lowered in D 4814
 - Increased Consumer Exposure to Hot Fuel Handling Driveability Problems
- Possible Introduction of E20

Possible Approach

- 2.1 Gasoline and Gasoline-Oxygenate Blends. (as defined in this regulation) shall meet the following requirements:
 - 2.1.1. The most recent version of ASTM D 4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” except that volatility standards for **conventional** unleaded gasoline blended with ethanol **and EPA specified SIP Gasoline with ethanol** shall **meet but** not be more restrictive than those adopted under the rules, regulations, and Clean Air Act waivers of the U.S. Environmental Protection Agency (which includes rules promulgated by the State). **Reformulated Gasoline and SIP Gasoline not specified with a waiver shall conform to all federal regulations and the most recent version of ASTM D 4814 without exception. Conventional** Gasoline blended with ethanol shall be blended under any of the following three options:

Possible Approach Cont'd.

- 2.1.1.1. The base gasoline used in such blends shall meet the requirements of ASTM D 4814, or
- 2.1.1.2. The blend shall meet the requirements of ASTM D 4814, or
- 2.1.1.3. The base gasoline used in such blends shall meet all the requirements of ASTM D 4814 except distillation, and the blend shall meet the distillation requirements of the ASTM specification.
- 2.1.2. Blends of **conventional** gasoline and ethanol **and EPA specified SIP Gasolines with ethanol** shall not exceed the ASTM D 4814 vapor pressure standards by more than 1.0 psi **for blends containing 9 to 10 volume percent ethanol during the EPA vapor pressure control period and for all blends outside the EPA control period.**
- **2.1.3 Blends of gasoline and ethanol shall not possess a 50% evaporated distillation temperature lower than 150°F for any ASTM D 4814 volatility class.**

Possible Approach New

- 2.1.1.1. The base gasoline used in such blends shall meet the requirements of ASTM D 4814, or
- 2.1.1.2. The blend shall meet the requirements of ASTM D 4814, or
- 2.1.1.3. The base gasoline used in such blends shall meet all the requirements of ASTM D 4814 except distillation, and the blend shall meet the distillation requirements of the ASTM specification.
- 2.1.2. Blends of **conventional** gasoline and ethanol **and EPA specified SIP Gasolines with ethanol** shall not exceed the ASTM D 4814 vapor pressure standards by more than 1.0 psi **for blends containing 9 to 10 volume percent ethanol during the EPA vapor pressure control period and for all blends outside the EPA control period.**
- 2.1.3 **Blends of gasoline and ethanol shall not possess a 50% evaporated distillation temperature lower than 150°F for any ASTM D 4814 volatility class or the base gasoline shall not possess a 50% evaporated temperature lower than 170°F for any ASTM D 4814 volatility class.**

Possible New Definitions

- **Conventional Gasoline**, – means gasoline which does not meet the requirements of reformulated gasoline or is not intended for sale in a federal RFG area.
- **Reformulated Gasoline (RFG)**, – means a gasoline-oxygenate blend certified to meet the specifications and emission reduction requirements established by the Clean Air Act Amendments of 1990, required for use in automotive vehicles in extreme and severe ozone non-attainment areas and those areas which opt to require reformulated gasoline.
- **SIP Gasoline**, -- means gasoline whose properties are approved by the EPA for a State Implementation Plan (SIP) for timely attainment of national air quality standards (NAAQS).